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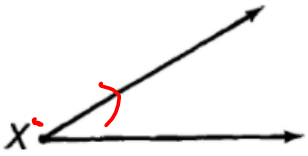
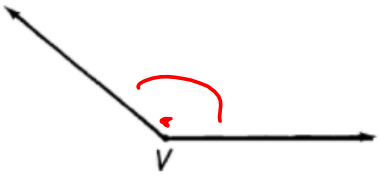
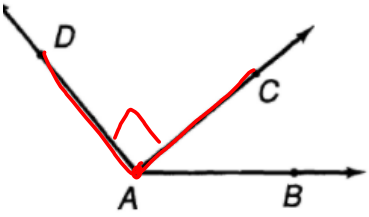
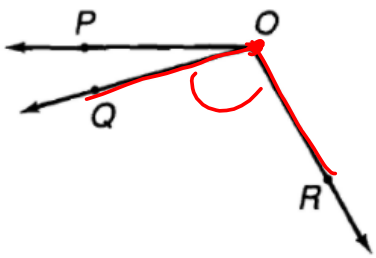
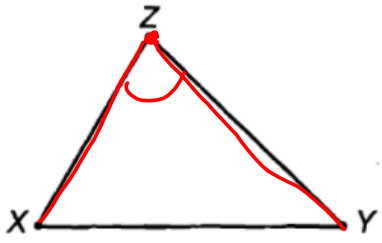
Angle Measure

Objective: Solve real-life and mathematical problems involving angle measure.

Types of Angles:

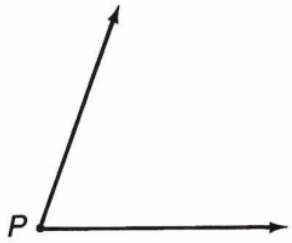
Acute	right	obtuse	Straight
less than 90°	Exactly 90°	greater than 90° and less 180°	Exactly 180°

Protractor is a tool used to measure angles. Use a protractor to measure e following angles by first finding the correct Vertex, the point where two rays eet. Classify each by angle type.

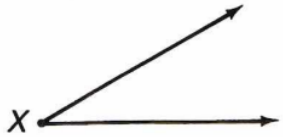
. The m∠X is _____ and acute. 	B. The m∠V is _____ and obtuse. 	C. The m∠K is _____ and acute.
. The m∠DAC is 90° and right. 	E. The m∠ROQ is _____ and obtuse 	F. The m∠XZY is _____ and acute. 

Why Did the Brontosaurus Need Band-Aids?

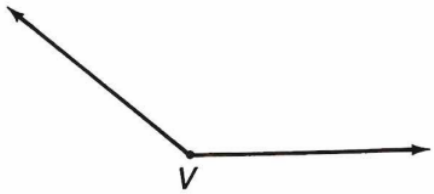
For each exercise, circle the letter of the best estimate. Write this letter in the box containing the number of the exercise.



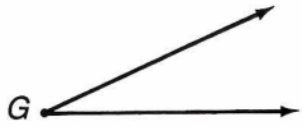
(1) $m\angle P$ is about
B 35° **S** 70°



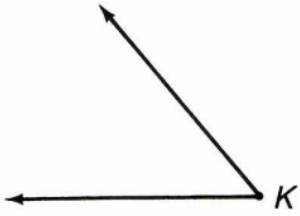
(2) $m\angle X$ is about
T 65° **O** 30°



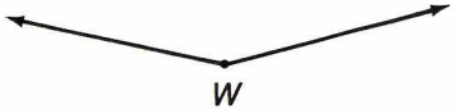
(3) $m\angle V$ is about
E 140° **J** 95°



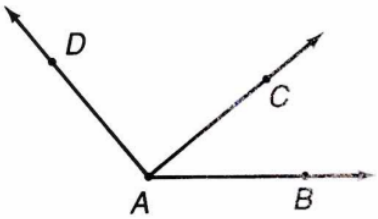
(4) $m\angle G$ is about
L 55° **I** 25°



(5) $m\angle K$ is about
O 50° **F** 80°



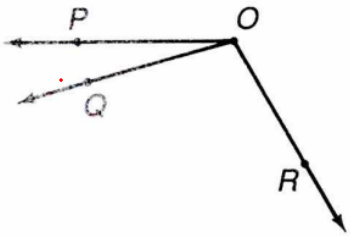
(6) $m\angle W$ is about
R 155° **C** 110°



(7) $m\angle BAC$ is about
S 40° **P** 15°

(8) $m\angle CAD$ is about
U 65° **I** 90°

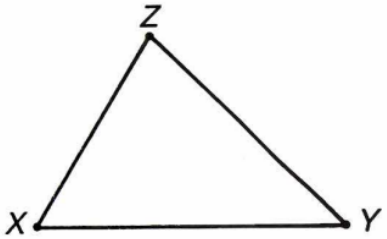
(9) $m\angle BAD$ is about
G 100° **O** 130°



(10) $m\angle POR$ is about
M 160° **F** 120°

(11) $m\angle POQ$ is about
V 40° **N** 15°

(12) $m\angle QOR$ is about
R 105° **B** 140°



(13) $m\angle X$ is about
P 35° **H** 60°

(14) $m\angle Y$ is about
S 45° **L** 25°

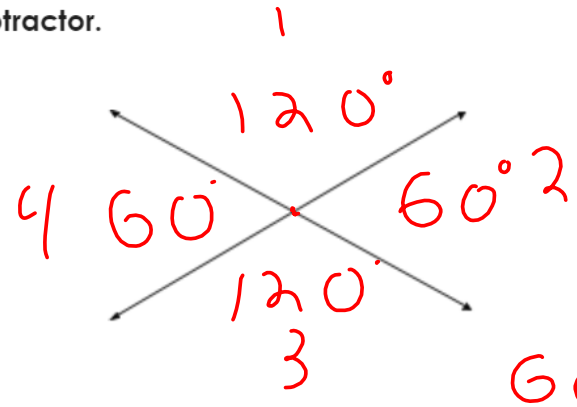
(15) $m\angle Z$ is about
D 75° **G** 40°

10	2	6	13	8	1	15	4	11	9	14	5	12	3	7

Angle Relationships

Objective: Solve real-life and mathematical problems involving angle measure.

Angles 1, 2, 3, and 4 are formed by two intersecting lines. Find the degree measure of each angle using a protractor.



60+120=180

What relationship do you notice between the angles? 4 angles

Top/Bottom same

left/right same

Angles 1 & 3 are a vertical angle pair. They share a common vertex and sit opposite of one another. Vertical angles will always be congruent, meaning equal. Angles 2 & 4 are also vertical angle pairs and congruent.

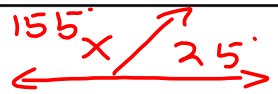
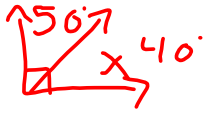
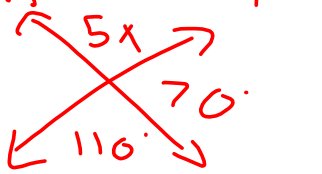
Angles 1 & 2 are an adjacent angle pair. They share a common vertex and side. Adjacent angles may or may not be congruent. In this case (not all!), each adjacent angle pair is also a linear pair, meaning they form a straight line. All linear pairs will be supplementary, meaning will add up to 180°. Angle pairings that add up to 90° are called complementary.

We can use what we know about angle relationships to find missing information without the use of a protractor.

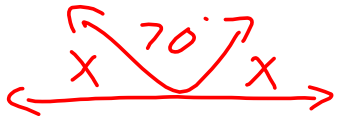
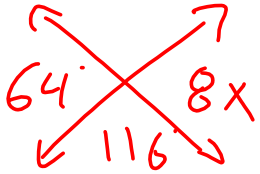
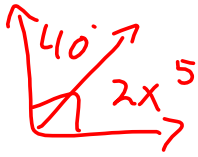
Determine the angle pair relationship.

A. 40°, 50° complementary	B. 130°, 50° supplementary	C. 45°, 45° Congruent Complementary

Determine the value of x.

D. $x = 50°$ vertical angle pair	E.  $x + 25 = 180$ $-25 \quad -25$ $x = 155°$ Supplementary	F.  $x + 50 = 90$ $-50 \quad -50$ $x = 40°$ Complementary
G. $x + 63 = 90$ $-63 \quad -63$ $x = 27°$	H.  $5x + 70 = 180$ $-70 \quad -70$ $5x = 110$ $x = 22$	I. $2x + 2 = 4x + 1$ $-1 \quad -1$ $2x + 1 = 4x$ $-2x \quad -2x$ $1 = 2x$ $\frac{1}{2} = x$

Determine the value of the missing angle.

J.  $2x + 70 = 180$ $-70 \quad -70$ $\frac{2x}{2} = \frac{110}{2}$ $x = 55°$	K.  $8x + 116 = 180$ $-116 \quad -116$ $\frac{8x}{8} = \frac{64}{8}$ $x = 8$	L.  $2x + 40 = 90$ $-40 \quad -40$ $\frac{2x}{2} = \frac{50}{2}$ $x = 25$

Summary:

How Did the Judge Find Out About the Rotten Milk?

Do each exercise and find your answer in the Code Key. Notice the letter next to the answer. Write this letter in the box containing the number for the exercise.

I. Complete each statement.

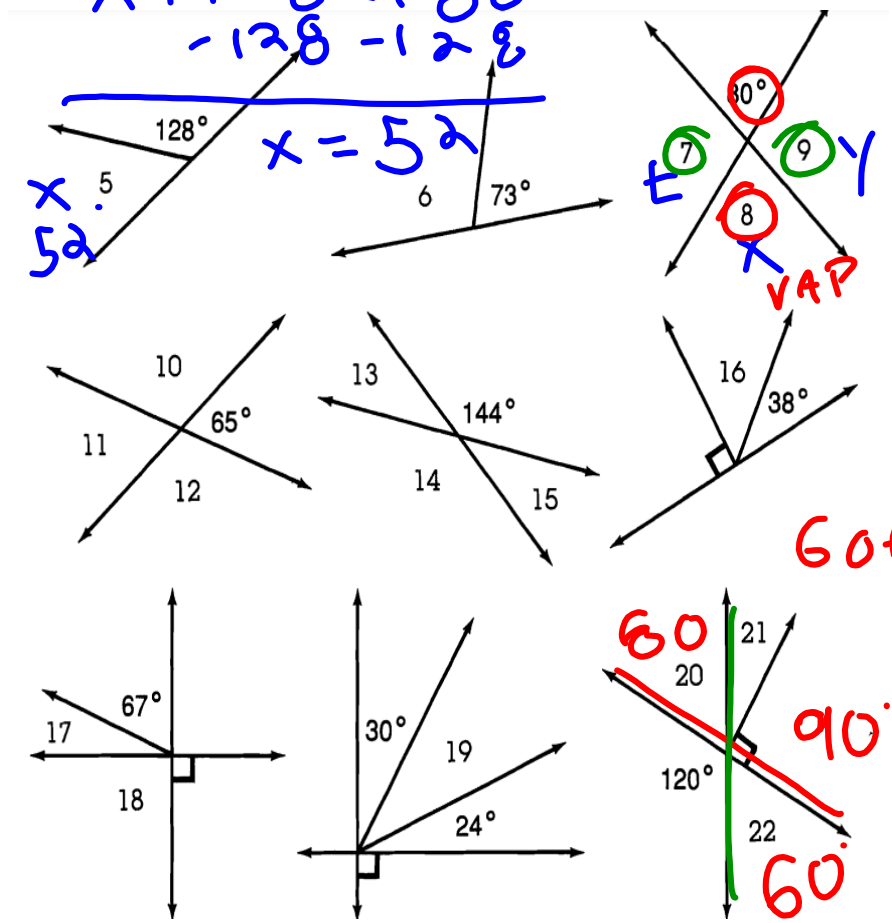
(1) Two angles are ***complementary*** if the sum of their measures is _____.

(2) Two angles are ***supplementary*** if the sum of their measures is _____.

(3) The ***complement*** of a 30° angle has a measure of _____.

(4) The ***supplement*** of a ***65***° angle has a measure of _____.

II. Find the measure of each numbered angle.



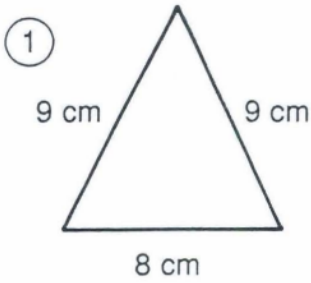
CODE KEY	
23°	D
30°	Q
36°	T
52°	A
60°	R
65°	U
80°	L
90°	O
100°	H
107°	S
115°	E
144°	W
180°	N

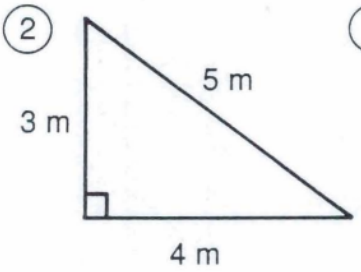
13	7	12	3	10	14	16	6	18	17	1	20	8	2	19	9	4	21	11	5	22	15
																			A		

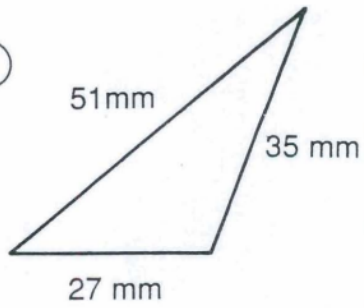
What Did the Boy Candy Say to the Girl Candy?

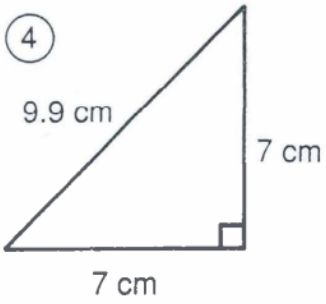
Do each exercise and find your answer in the set of answers to the right. Write the letter of the answer in each box containing the number of the exercise. If the answer has a ●, shade in each box containing that exercise number.

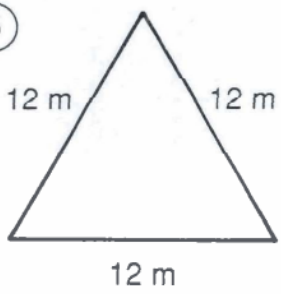
I. Classify each triangle two ways.

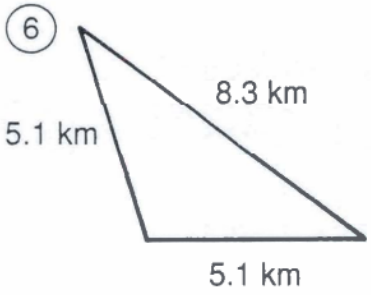
(1) 

(2) 

(3) 

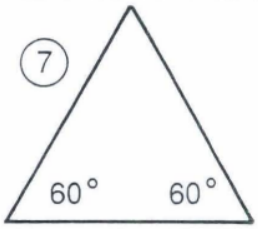
(4) 

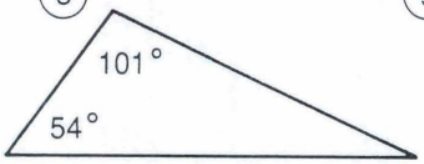
(5) 

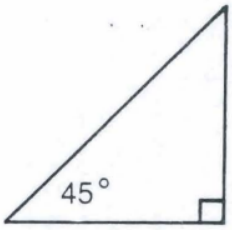
(6) 

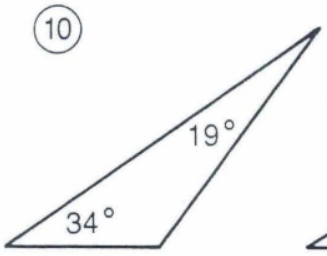
(S) acute; scalene
(I) acute; isosceles
(H) acute; equilateral
(O) right; scalene
(M) right; isosceles
(A) obtuse; scalene
(F) obtuse; isosceles

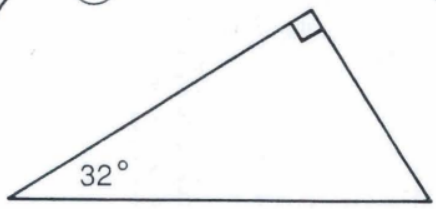
II. Find the measure of the third angle in each triangle.

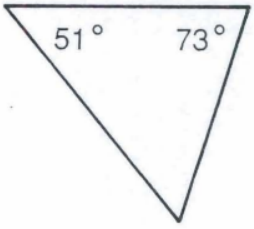
(7) 

(8) 

(9) 

(10) 

(11) 

(12) 

(R) 25°
● 116°
(E) 56°
(T) 127°
(W) 60°
(N) 30°
● 58°
(C) 45°
(L) 40°

(13) Two angles of a triangle have equal measures. If the third angle measures 120°, what is the measure of each of the equal angles?

7	12	11	3	8	12	11	4	1	13	10	11	6	2	8	11	12	3	9	5	11	2	10	5	12	8

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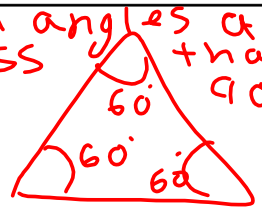
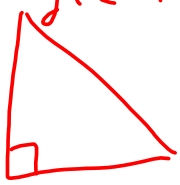
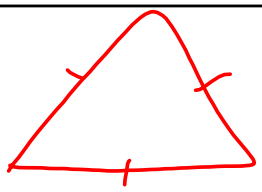
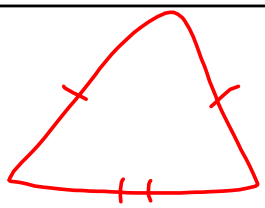
Triangles

Objective: Solve real-life and mathematical problems involving angle measure.

Classifying Triangles by Angle

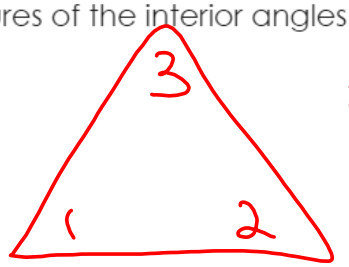
all angles are less than 90°  acute triangle	1 angle is 90°  right triangle	1 angle is greater than 90° obtuse triangle

Classifying Triangles by Sides

 equilateral triangle all sides equal	 isosceles triangle 2 sides are equal	Scalene triangle no sides are the same

Angle Sum of a Triangle

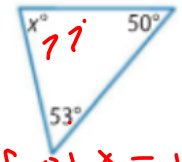
All triangles are made up of three interior angles. The sum of the measures of the interior angles of a triangle will always be 180°.



$m\angle 1 + m\angle 2 + m\angle 3 = 180°$

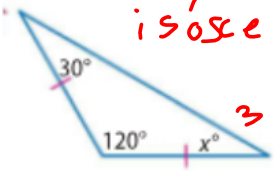
Find the value of x in each triangle. Then classify each triangle by its angles and its sides.

A. acute, Scalene



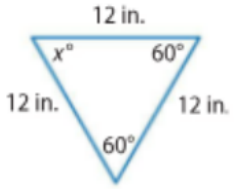
$53+50+x=180$
$103+x=180$
$-103 \quad -103$
$x=77$

B. Obtuse, isoscelese



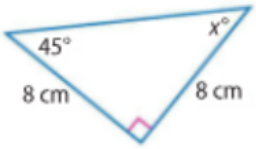
$120+30+x=180$
$150+x=180$
$-150 \quad -150$
$x=30$

C.



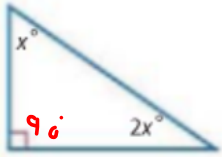
acute, equilateral

D.



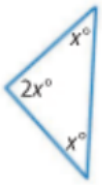
E.

F.

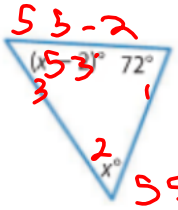


$x+2x+90=180$

G.



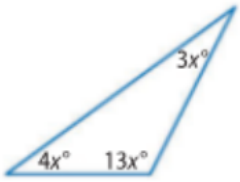
H.



55

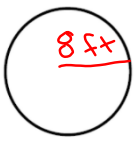
$72+x+(x-2)=180$
$72+x+x-2=180$
$70+2x=180$
$-70 \quad -70$
$2x=110$
$\frac{2x}{2}=\frac{110}{2}$
$x=55$

I.



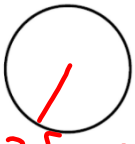
Find the circumference of each circle.

E.



$C = 2\pi r$
$C = 2\pi(8)$
$C = 16\pi$
$C = 16(3.14)$
$C = 50.24$ ft

F.



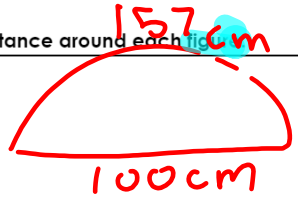
$C = 2\pi r$
$C = 2\pi(3.5)$
$C = 7\pi$
$C = 21.98$ cm

G.

$C = \pi d$
$C = \pi 70$
$C = 219.8$ yds

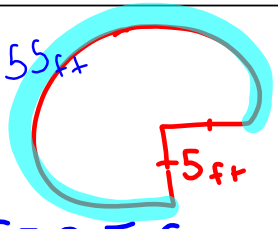
Find the distance around each figure.

H.



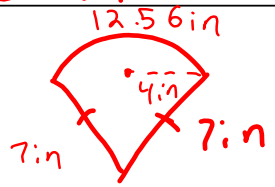
$C = \pi D$
$C = \pi \times 100$
$C = 314 \div 2 = 157$
$+100$
257 cm

I.



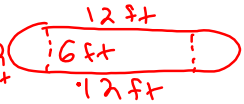
$C = 2\pi r$
$C = 2\pi(5)$
$C = 10\pi$
$C = 10(3.14)$
$C = 31.4$
$\times .75$
23.55 ft
$\times 10$
33.55 ft

J.



$C = 2\pi r$
$C = 2\pi(4)$
$C = 8\pi$
$C = 8(3.14)$
$C = 25.12$
$\div 2$
$C = 12.56$ in
$+14$
26.56 in

K. 9.42 ft

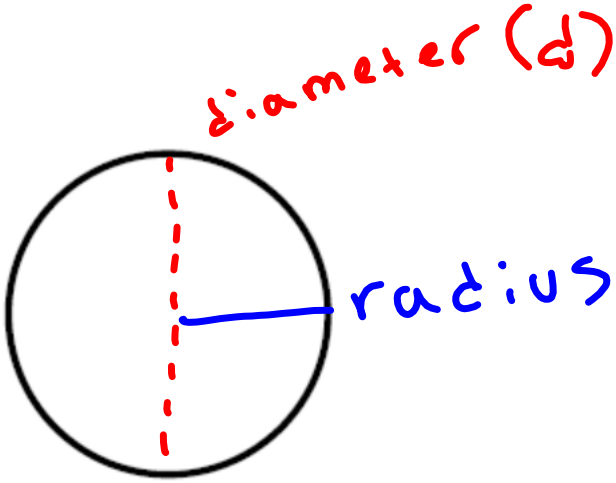


9.412ft

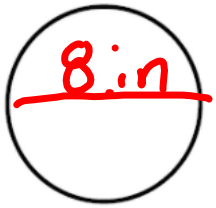
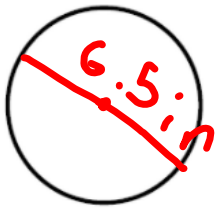
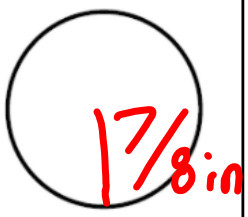
$C = \pi d$
$C = \pi 6$
$C = (3.14)(6)$
$C = 18.84$
$+24.00$
42.84 ft

Objective: Know the formulas for the circumference of a circle and use it to solve problems.

Parts of a Circle:



Determine the radius and diameter of each circle.

A.	B.	C.	D.
			
r= 5 in d= 10 in	r= 4 in d= 8 in	r= 3.25 in d= 6.5 in	r= 7/8 in d= _____

$\frac{7}{8} \times \frac{2}{1} = \frac{14}{8}$

$1\frac{6}{8} = 1\frac{3}{4}$

Circumference	Just as we can measure the distance around other shapes, we can also find the perimeter of circles. However, because of the curves, we must use circumference instead. The circumference of a circle is equal to π times twice its radius or π diameter. $C = 2\pi r$ or $C = \pi d$

Circles Continued

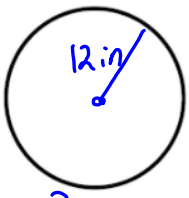
Objective: Know the formulas for the area of a circle and use it to solve problems.

FUN FACT: Did you know that pizzas are measured by their diameter?!

Area	The area of a circle is equal to the product of π and the square of its radius. $A = \pi r^2$

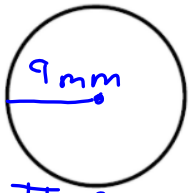
Find the area of each circle.

A.



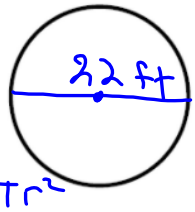
$A = \pi r^2$
$A = 12^2 \pi$
$A = 144\pi$
$A = 452.16 in^2$

B.



$A = \pi r^2$
$A = 3.14 \times 9^2$
$A = 3.14 \times 81$
$A = 254.34 mm^2$

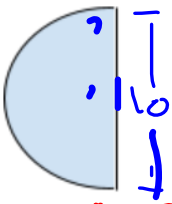
C.



$A = \pi r^2$
$A = \pi 11^2$
$A = \pi \cdot 121$
$A = 3.14(121)$
$A = 379.94 ft^2$

Find the area of each figure.

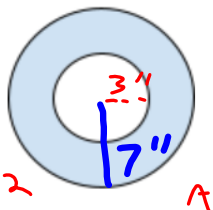
D.



$A = \pi r^2$
$A = \pi 10^2$
$A = \pi 100$

$A = 314 cm^2$
$A = 157 cm^2$

E.



$A = \pi 7^2$
$A = \pi 49$
$A = 153.86 in^2$

$A = \pi (3)^2$
$A = \pi \cdot 9$
$A = 28.26 in^2$

$153.86 - 28.26 = 125.60 in^2$

Hadley and Kona are ordering pizza while Ms. Belcher is out of town. Stadium Pizza is having a special on medium and large pizzas. Medium pizzas are 10 inches in diameter and cost $7.99. Large pizzas are 14 inches in diameter and cost $14.99. Which pizza is the better deal?

Summary:

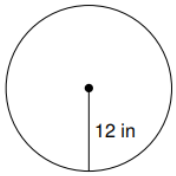
Kuta Software - Infinite Geometry Name_____

Circumference and Area of Circles

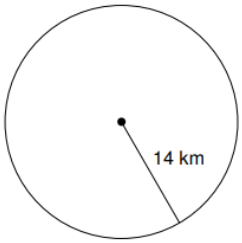
Date_____ Period____

Find the area of each. Use your calculator's value of π. Round your answer to the nearest tenth.

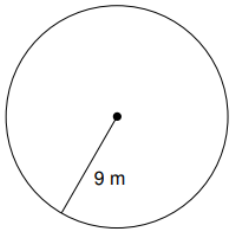
1)



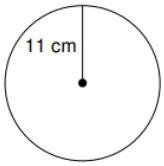
2)



3)



4)



5) radius = 2.6 in

6) radius = 34.1 in

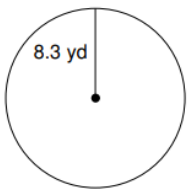
7) radius = 13.2 km

8) radius = 29.9 km

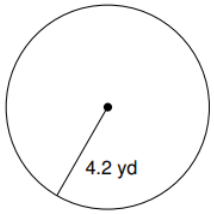
Find the circumference of each circle. Use your calculator's value of π. Round your answer to the nearest tenth.

9)

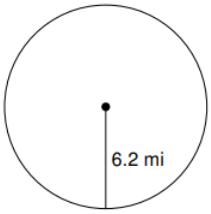
10)



11)



12)



13) radius = 5.2 ft

14) radius = 11.1 ft

15) radius = 9.5 in

16) radius = 9.3 in

Find the radius of each circle. Use your calculator's value of π. Round your answer to the nearest tenth.

17) circumference = 62.8 mi

18) circumference = 69.1 yd

19) circumference = 12.6 yd

20) circumference = 25.1 ft

Find the diameter of each circle. Use your calculator's value of π. Round your answer to the nearest tenth.

21) area = 201.1 in^2

22) area = 78.5 ft^2

Find the circumference of each circle.

23) area = 64π mi^2

24) area = 16π in^2

Find the area of each.

25) circumference = 6π yd

26) circumference = 22π in

Critical thinking question:

27) Find the radius of a circle so that its area and circumference have the same value.

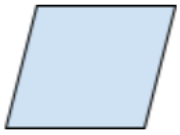
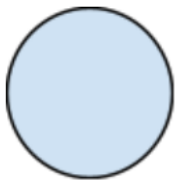
Composite Figures

Objective: Solve real-world and mathematical problems involving area of two-dimensional objects composed of triangles, quadrilaterals, and polygons.

How might you find the perimeter and area of the figure below?

Composite Figure	A composite figure is made up of _____ shapes. To find the area of a composite figure, _____ the figure into shapes with areas you know. Then find the sum of these areas. Many classic shapes can also be treated as composite figures.

Common Shapes

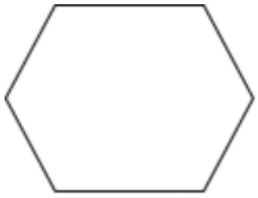
Shape	Picture	Formula
		
		

Find the distance around each figure. Then find the area.

A.

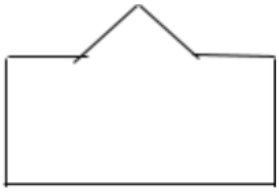
Perimeter: _____ Area: _____

B.



Perimeter: _____ Area: _____

C.



Perimeter: _____ Area: _____

D.

Perimeter: _____ Area: _____

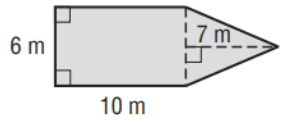
NAME _____ DATE _____ PERIOD _____

Lesson 3 Skills Practice

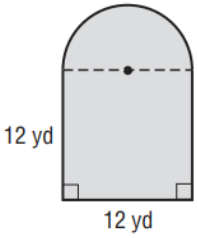
Area of Composite Figures

Find the area of each figure. Round to the nearest tenth if necessary.

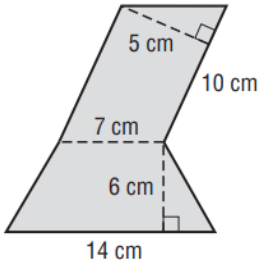
1.



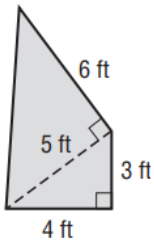
2.



3.



4.



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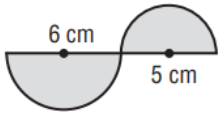
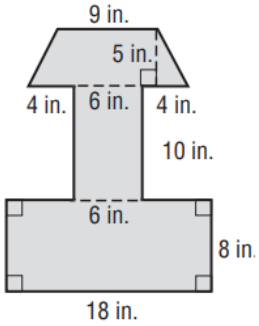
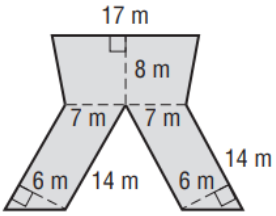


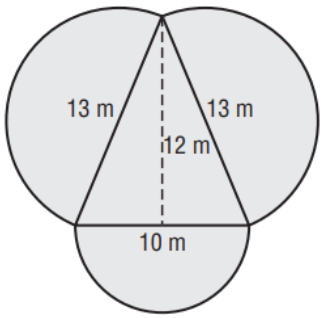
6.



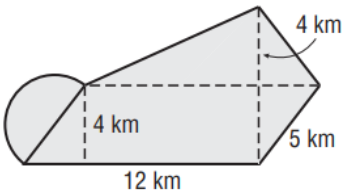
7.



8.

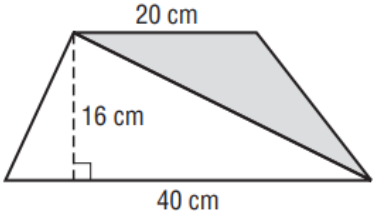


9.

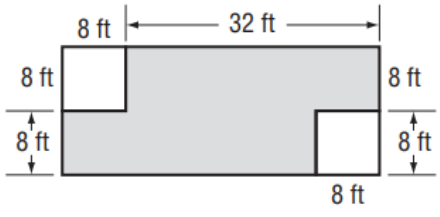


Find the area of the shaded region.

10.



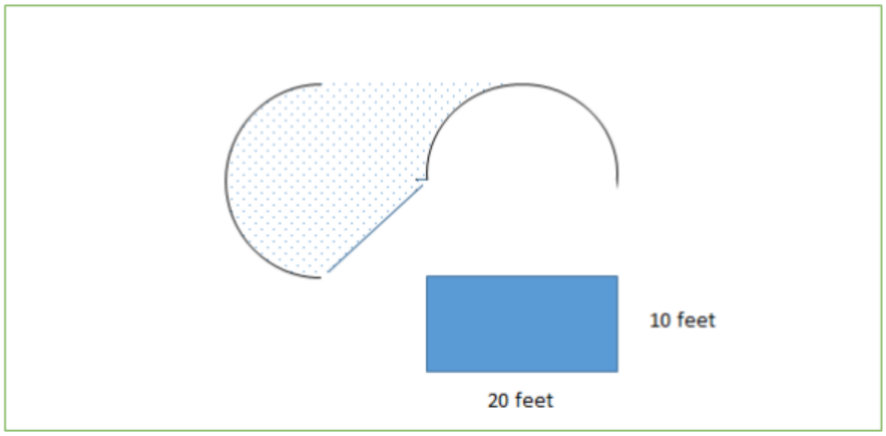
11.



Building a Backyard

Hadley and Kona are redesigning their backyard! Currently there is a small concrete slab (shaded rectangle) right outside the sliding door to the house.

Part A: Hadley would like to extend the concrete an additional 20 feet out towards the back fence, and an additional 10 feet to the left of the original slab. Below is a sketch of what Hadley would like the concrete to look like. Label the dimensions of the plan and find the area so he can contact a contractor for a pricing estimate.



Part B: Kona would like to install artificial turf. Refer to the dotted region on the plans above. Find the area of the artificial turf so she can contact a landscaper for a pricing estimate.

Part C: Hadley hires a reliable contractor to lay the concrete. With labor fees, the job will estimate to about $5 per square foot. How much will Hadley be charged to complete the job?

Part D: Kona decides to install the artificial turf herself. She borrows all needed materials from her "grandpuppa", so all she has to purchase is the turf itself. She finds a sample she likes originally priced at $3.00 per square foot. It is now 30% off! With the discounted pricing, how much will Kona pay (before tax) to finish the job?

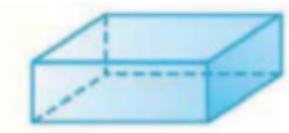
Part E: What is the estimated total cost of Hadley and Kona's backyard project?

Volume of Prisms

Objective: Solve real-world and mathematical problems involving volume of three-dimensional objects composed of prisms and pyramids.

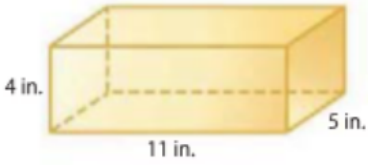
Volume	Volume is the amount of _____-dimensional _____ occupied by an object. Volume can also be referred to as _____. All 3D figures follow the same formula for volume: Depending on the figure, the formula may be altered.

A prism is a _____ with two _____, _____ bases. The bases of rectangular prisms are _____. The bases of triangular prisms are _____.

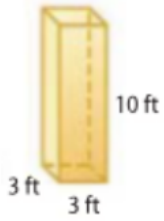
Rectangular Prism	Triangular Prism
	

Find the volume of the following prisms. Round answers to the nearest hundredth, if necessary. Label all final answers with correct units.

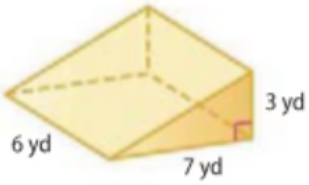
A.



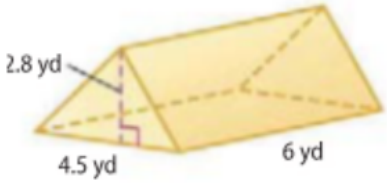
B.



C.



D.



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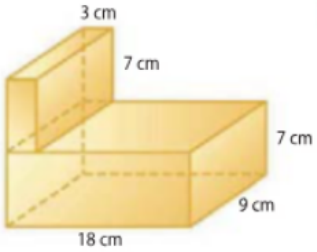
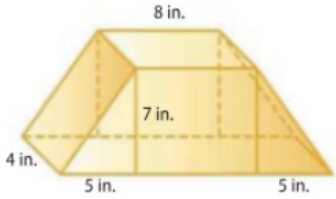


F.



Summary:

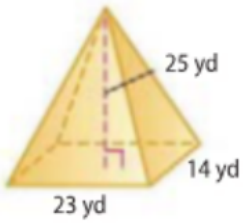
Volume of Pyramids

Objective: Solve real-world and mathematical problems involving volume of three-dimensional objects composed of prisms and pyramids.

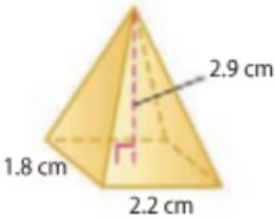
Volume of Pyramids	Pyramids have either a _____ or _____ base. The lateral faces of a pyramid will meet at a common _____. The height of a pyramid is the distance from the vertex _____ to the base.

Find the volume of the following pyramids. Round answers to the nearest hundredth, if necessary. Label all final answers with correct units.

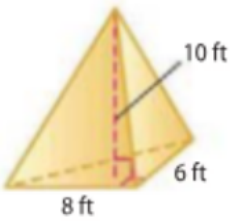
A.



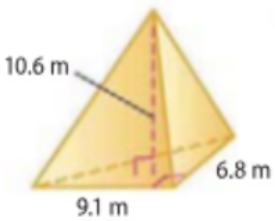
B.



C.

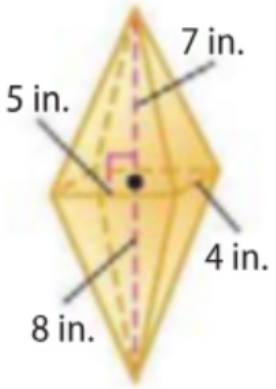


D.

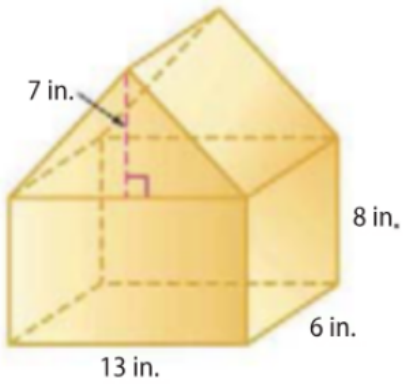


Find the volume of the following composite figures. Round answers to the nearest hundredth, if necessary. Label all final answers with correct units.

E.



F.



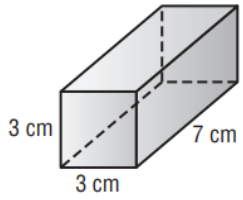
NAME _____ DATE _____ PERIOD _____

Lesson 4 Skills Practice

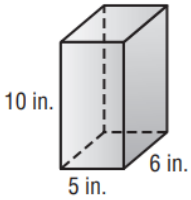
Volume of Prisms

Find the volume of each prism. Round to the nearest tenth if necessary.

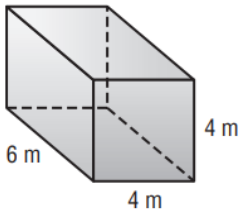
1.



2.



3.



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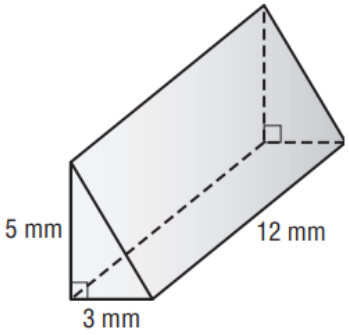
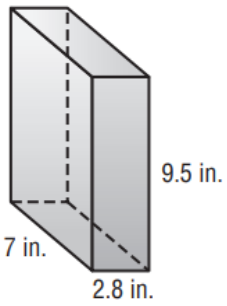
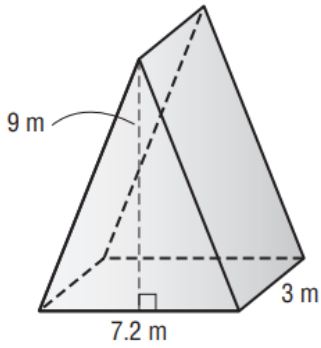


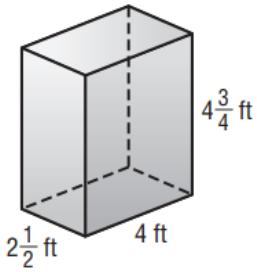
5.



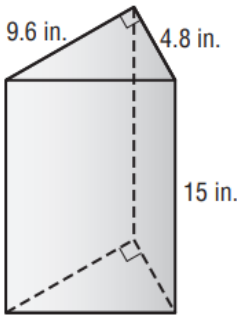
6.



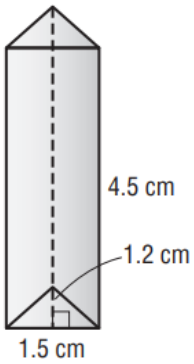
7.



8.



9.



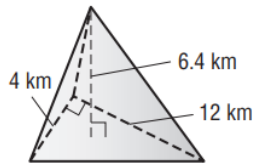
NAME _____ DATE _____ PERIOD _____

Lesson 5 Skills Practice

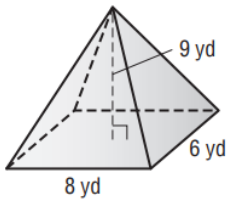
Volume of Pyramids

Find the volume of each pyramid. Round to the nearest tenth if necessary.

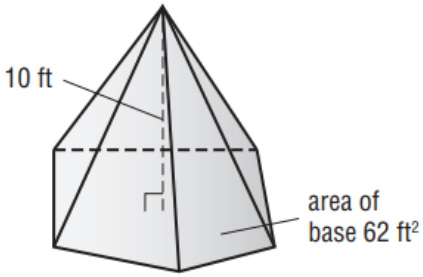
1.



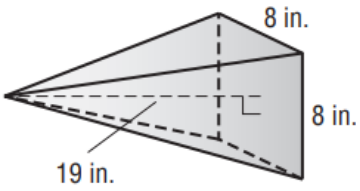
2.



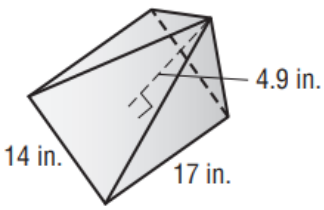
3.



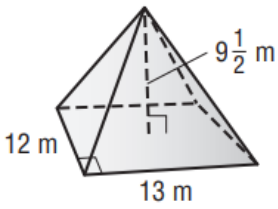
4.



5.



6.



Find the height of each pyramid.

7. square pyramid: volume 225 cubic inches, base edge 5 inches

8. triangular pyramid: volume 56 cubic centimeters, base edge 8 centimeters, base height 7 centimeters

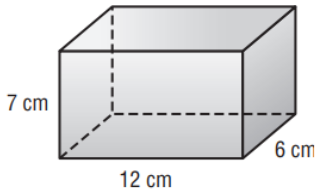
NAME _____ DATE _____ PERIOD _____

Lesson 6 Skills Practice

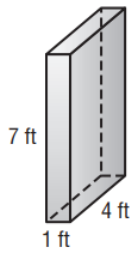
Surface Area of Prisms

Find the surface area of each prism. Round to the nearest tenth if necessary.

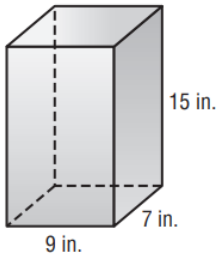
1.



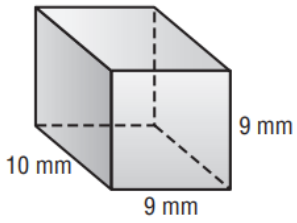
2.



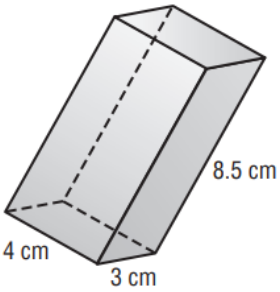
3.



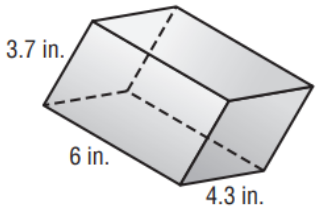
4.



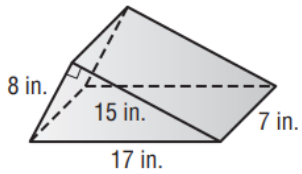
5.



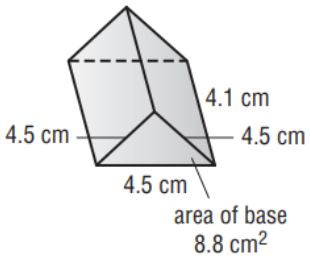
6.



7.



8.



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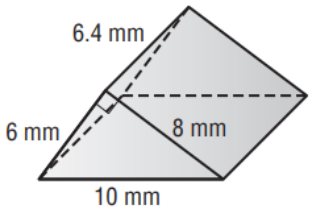


10. Find the surface area of a rectangular prism that has a length of 8 inches, a width of 3 inches, and a height of 6 inches.

11. Find the surface area of a triangular prism. The sides of the right triangular base measure 9 centimeters, 12 centimeters and 15 centimeters. The height of the prism is 20 centimeters.

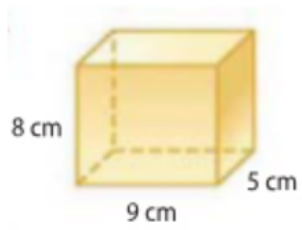
Surface Area

Objective: Solve real-world and mathematical problems involving surface area of three-dimensional objects composed of prisms and pyramids.

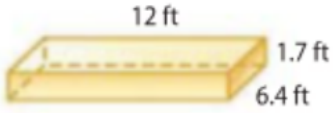
Surface Area	The surface area of a three-dimensional figure is the _____ of the _____ of all _____.

Find the surface area of the following figures. Round answers to the nearest hundredth, if necessary. Label all final answers with correct units.

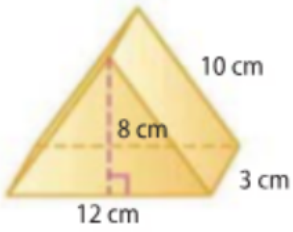
A.



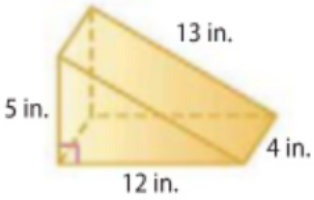
B.



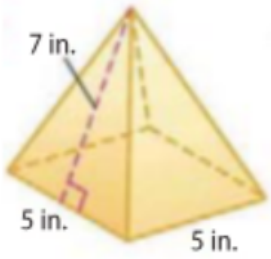
C.



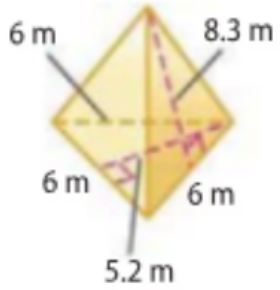
D.



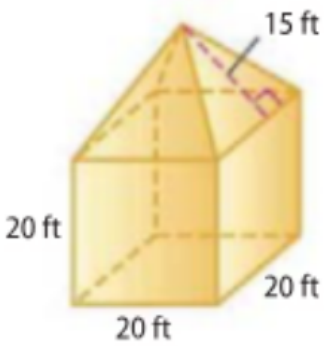
E.


7 in.
5 in.
5 in.

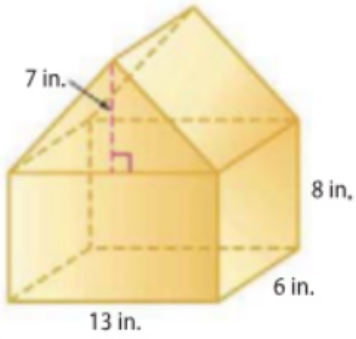
F.


6 m
8.3 m
6 m
6 m
5.2 m

G.


15 ft
20 ft
20 ft
20 ft

H.


7 in.
8 in.
6 in.
13 in.

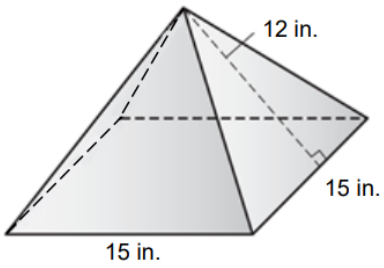
NAME _____ DATE _____ PERIOD _____

Lesson 7 Skills Practice

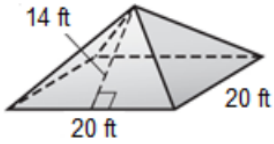
Surface Area of Pyramids

Find the total surface area of each pyramid. Round to the nearest tenth if necessary.

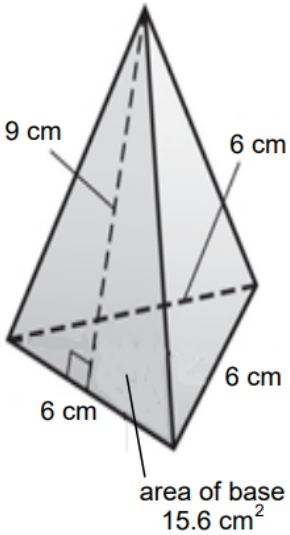
1.



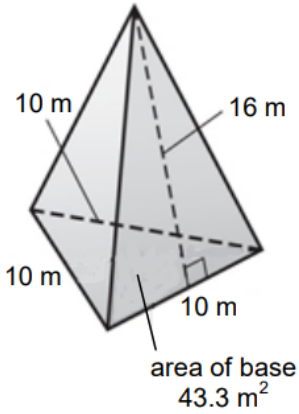
2.



3.



4.



5. The base of a square pyramid has a side length of 50 centimeters. The slant height is 32 centimeters. Find the surface area.

6. An equilateral triangular pyramid has a slant height of 8.3 inches. The triangular base has a perimeter of 4.8 inches and an area of 1.1 square inches. Find the surface area of the pyramid.